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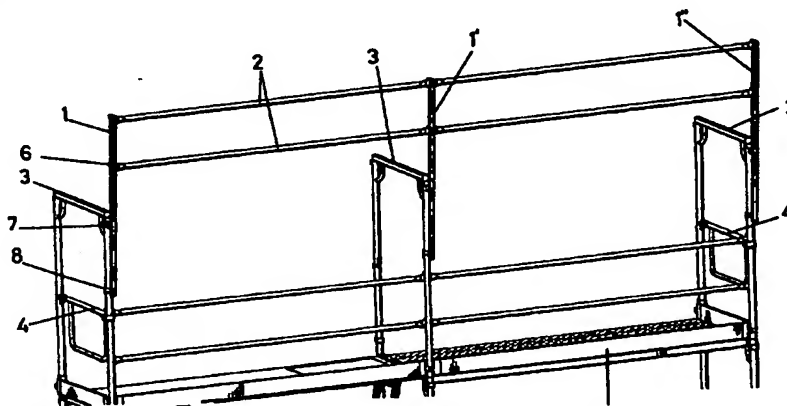
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**(54) NEW PROCESS FOR MOUNTING HANDRAILS IN SCAFFOLDS**

(57) The invention is applicable as a safety measure in assembling scaffolds for construction work, specifically in assembly of the railings, so that these are made to be the first component installed on the upper level, this being performed from the level where the worker is already at, so that when said worker rises to complete the scaffold a provisional safety railing is already in

place. The provisional railing is put together, raised and assembled by use of an auxiliary element or railing base to which the horizontal bars are connected, element which is anchored by suitable means to the structural frame of the scaffold.



**FIG. 4**

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## Description

### OBJECT OF THE INVENTION

[0001] The invention relates to a new assembly procedure for railings used in construction scaffolding, so that the first element which is assembled in each floor of the scaffolding is precisely the railing, thus providing this safety measure at all times during assembly of the scaffold.

[0002] The invention provides the advantage over known procedures of a greater ease in assembly of the safety railing, while it is made from a simple element which can be used in varying numbers and in combination with the bars of the scaffolding system.

### BACKGROUND OF THE INVENTION

[0003] In construction work one of the first aspects to consider is the safety of the workers, as due to the conditions in which this work must be carried out it entails potentially dangerous tasks where serious accidents may occur.

[0004] In this sense, scaffolds are crucial working tools in construction work, where safety measures must be especially high, due to the heights which may be involved and because it is there that most work is in fact carried out.

[0005] For this reason, safety measures to prevent accidents are taken such as harnesses which secure the worker to the scaffolding structure and railings which prevent the worker from falling from the working platform.

[0006] However, while assembling the scaffolds there are times when protection is lower, as when the worker rises to the highest platform to complete the assembly of this level, in which the safety railing has not yet been assembled, and thus this worker will for some time work without this safety measure.

[0007] In order to solve this deficiency a mechanism is employed nowadays known as 'French railing' which can be attached to the railing and is an ideal solution, as this 'French railing' is assembled on the upper level before the remaining elements which make up the structure, that is, before workers begin to assemble this level of the scaffold.

[0008] However, said 'French railing' system, which provides optimum results from a functional point of view, presents problems which derive from its size, as because of it is an element of a large size which is integrated into the scaffold as part of its structure, it requires at least two workers for its assembly.

[0009] To the aforementioned problem must be added those which derive from transport of said elements and from their storage, both during the transportation from the warehouse to the construction site and at the construction site itself, as mentioned above due to its large size.

[0010] In fact, despite the 'French railing' being a good solution as regards safety, its use is not widespread as it is somewhat rejected due to its drawbacks deriving from the aforementioned problems.

### DESCRIPTION OF THE INVENTION

[0011] The new assembly procedure for safety railings in scaffolding has been conceived to solve the aforementioned problems by greatly simplifying placing of the first or provisional safety railing from the lower level platform, so that it can be performed by a single worker.

[0012] Additionally, the provisional safety railing is formed from the bars of the scaffolding itself and an element which is the core of the system, an auxiliary piece which from now on shall be known as a railing base, which is used to assemble the railing, hoist it to the upper level and anchor it to the frame of the scaffold structure, all of this before the remaining elements which make up the scaffold are assembled in this upper level.

[0013] This auxiliary element or railing base is provided with means for attaching the horizontal bars which are identical to those of the scaffold itself as well as with means for attaching the assembled safety railing to the scaffold frame.

[0014] The auxiliary element or railing base is in the form of a very open angle, so that the first segment includes the means of anchoring to the frame, which segment, once having assembled the auxiliary element on the frame, is left divergent from the frame, and runs parallel to it after a point practically in its center. The diverging segment includes the means for attaching the railing base to the frame, while the parallel segment includes the means for anchoring the bars.

[0015] The railing is assembled from the lower level platform provisionally, so that it is the first element assembled at the level immediately above.

[0016] Mounting of the first or provisional safety railing begins with its gradual assembly, for which the bars are joined to a first auxiliary element or railing base by conventional connection devices of the scaffold itself. This auxiliary base with its bars anchored on one end is lifted and then connected to the corresponding frame of the scaffold, for which it is provided with a central hook and with an end plate which is inserted into corresponding receiving lugs provided in the frame. Then the bars are connected at the opposite end to a further auxiliary element or railing base which in turn is connected to another set of bars, which would be part of the following segment of the safety railing. The second auxiliary element is raised and attached to the corresponding frame similarly to the first one, thus forming the first segment of the safety railing. This operation is repeated as many times as required by the length of railing needed for the scaffold.

[0017] Once the safety railing is assembled the

remaining elements which make up the scaffold are assembled at this level, such as platforms, baseboards, horizontal bars, diagonal bars (if required), side bars, etc. The bars which are part of the safety railing remain in this level as part of the definitive safety railing, that is, they remain as structural elements of the scaffold itself. Naturally, the recovered auxiliary elements or railing bases are used in assembling the provisional safety railing for the following level.

[0018] The conventional means referred to for connecting the auxiliary elements to the bars in assembling the railing consist of rods which are attached to the auxiliary elements.

### DESCRIPTION OF THE DRAWINGS

[0019] As a complement of the description being made and in order to aid a better comprehension of the characteristics of the invention, the present descriptive memory is accompanied by a set of drawings as an integral part of the same where, for purposes of illustration and in no way meant as a definition of the limits of the invention, the following is shown:

Figure 1 is a perspective view of the general structure of a scaffolding level during preparation for assembling the provisional railing of the higher level.

Figure 2 is a representation similar to the previous one where the first auxiliary element or railing base is mounted on the corresponding frame.

Figure 3 is a representation similar to the previous ones where the provisional assembly of a first segment of the provisional railing has been finished and assembly of a second segment has begun.

Figure 4 shows similarly two assembled segments of the provisional safety railing.

Figure 5 shows the incorporation of the remaining elements of this level, and how the railing bars are finally attached to the scaffold structure, forming the definitive safety railing.

Figure 6 is an enlarged view of details of the means by which the auxiliary element or railing base is attached to the scaffolding frame.

Figure 7 is a side view of the auxiliary element or railing base and the part of the frame on which it is mounted.

### PREFERRED EMBODIMENT OF THE INVENTION

[0020] The auxiliary element or railing base (1) is shown in detail in figure 7, showing that it consists of a

bar, preferably a square tube, which is provided at the top with conventional attachment means (6) of bars (2). At the bottom are welded to it the elements for anchoring to frame (3), which consist of top hook (7) and lower plate (8) which can be inserted on corresponding lugs (9) and (10) of the aforementioned frame.

[0021] In figure 6 one can see that lugs (9) and (10) are U-bars which together with the bar of frame (3) to which they are connected form a vertical orifice. Top hook (7) is also a U-bar which can be inserted in top lug (9), while lower plate (8) which is next to the bottom end of the auxiliary element or railing base (1) comes from a U-bar placed so that it lies along the side of the front bar of frame (3), whose plate is meant to be inserted in lower lug (10).

[0022] With both attachments auxiliary element (1) is held in the scaffold so that it cannot move in any direction but upwards.

[0023] To form the provisional safety railing as shown in figure 1, the worker attaches bars (2) by one of their ends to auxiliary element (1), leaving the other ends free. This is done with conventional means (6).

[0024] As seen in figure 2, the first auxiliary element or railing base (1) is partially lifted and is attached to frame (3) with hook (7) and plate (8) which insert in respective lugs (9) and (10) of frame (3). Then the free ends of the bars are connected to a second auxiliary element or railing base (1') which also receives an additional set of bars (2').

[0025] The next step, shown in figure 3, entails lifting the railing, lifting the second auxiliary element or railing base (1') and attaching it in an identical manner as the first one to the corresponding frame, so that the first segment of the railing will be ready and the second segment partially assembled, which will be formed once bars (2') are joined by their free ends to a further auxiliary element (1'') as shown in figure 5.

[0026] This assembly process is repeated as many times as required to form the railing bar segments needed for the building facade covered by the scaffolding.

[0027] As shown in figure 5, once the provisional assembly of the provisional safety railing is finished, the remaining elements are added, such as frames (3), lateral railings (4), baseboards (5), platforms (11), etc. At this stage of the assembly and in order to make coupling of frames (3) possible, each auxiliary element or railing base (1) has an inclined lower segment as shown in figure 7, so that the rest of base (1) and railing bars (2) are located in front of frame (3) so that the upper lateral frame can be telescopically coupled.

[0028] Afterwards railing bars (2) and (2') are removed from their anchoring to bases (1) and attached to side frames (3) of the scaffolding, thus becoming part of the structure and forming the final safety railing.

## Claims

1. New assembly procedure for scaffolding railings intending, as a safety measure, that the first element assembled at each scaffolding level is a railing, this assembly being performed from the lower level, characterised in that a provisional safety railing is formed with an auxiliary element or railing base (1) joined by conventional means (6) to bars (2), said auxiliary element (1) being used to raise and gradually secure each corresponding railing segment, assembled or preassembled, to the respective structural frames of the scaffolding, where auxiliary element (1) are attached to frames (3) by means of lugs (9) and (10) provided in the latter, and by auxiliary element (1) having an inverted U-bar hook which plays within lug (9) and a further U-bar near its end which laterally embraces auxiliary element (1) and is prolonged as a plate which fits in lug (10) of the frame. 5 10 15 20
2. New assembly procedure for scaffolding railings as in claim 1, characterised in that the worker partially puts together the provisional safety railing at the floor where it is being assembled, attaching matching ends of bars (2) of the railing to the conventional attachment means provided in auxiliary element (1), leaving the other ends free to later raise the unit manually, securing the auxiliary element to the scaffolding structure and repeating this process for a further one to which previously are attached the free ends and the ends of the group of bars which make up the next segment of the railing, and so on until the required length of railing is obtained, followed by assembly of the remaining elements which make up each level of the scaffold, so that once the installation is completed the bars of the provisional railing are removed from their attachments to the auxiliary element and definitively attached to the frames in order to create the fixed railing, while auxiliary element (1) are recovered to begin putting together, raising and assembling the provisional safety railing for the following floor above. 25 30 35 40 45
3. New assembly procedure for scaffolding railings as in previous claims, characterised in that auxiliary element or railing base (1) shows two segments which form an open angle between them, so that the lower segment, which after said auxiliary element is attached to the frame is divergent, includes the means of attachment to said frame, while the other segment, which after assembly is left parallel to the frame, includes the means for securing bars (2). 50 55

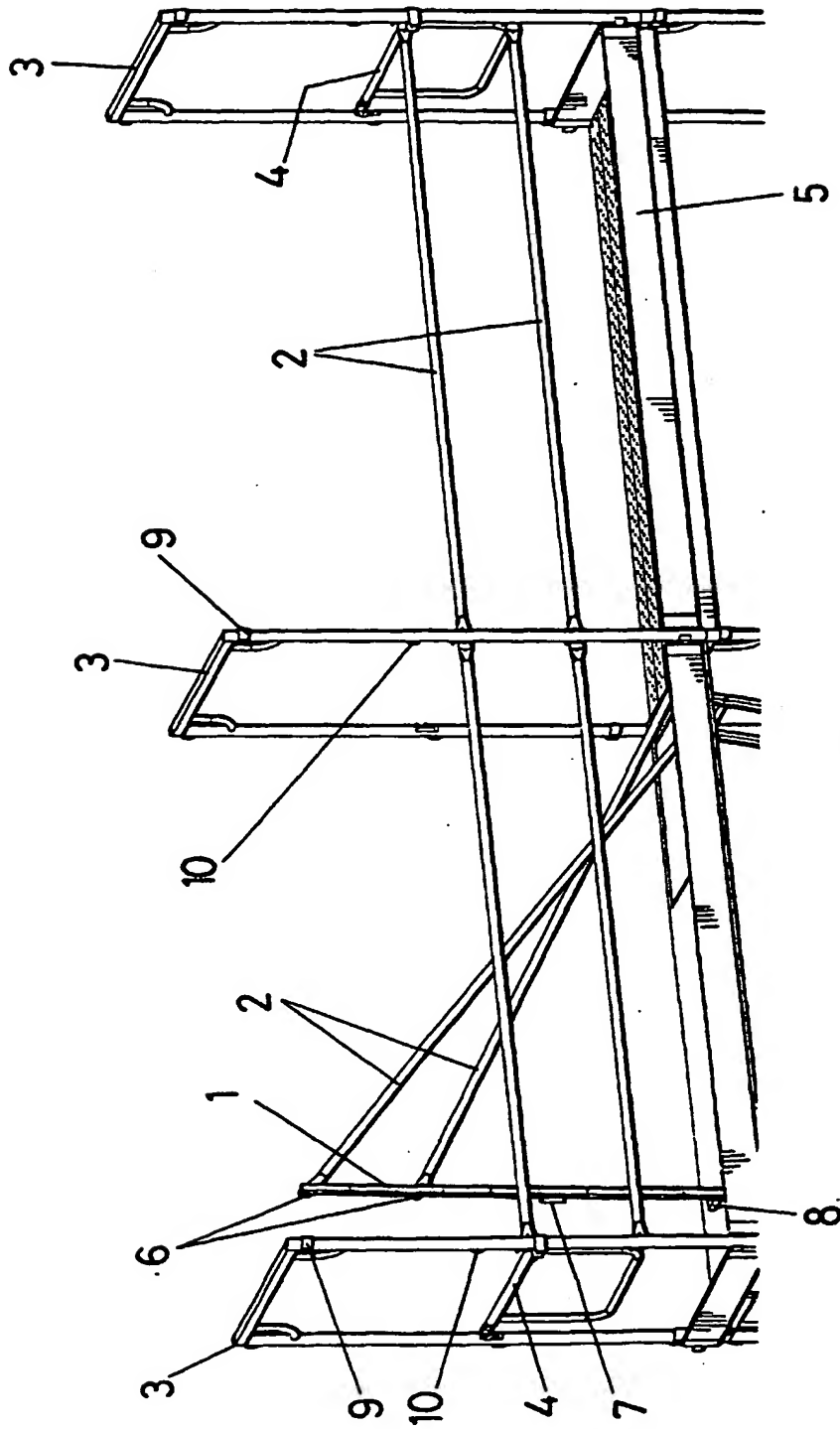


FIG.1

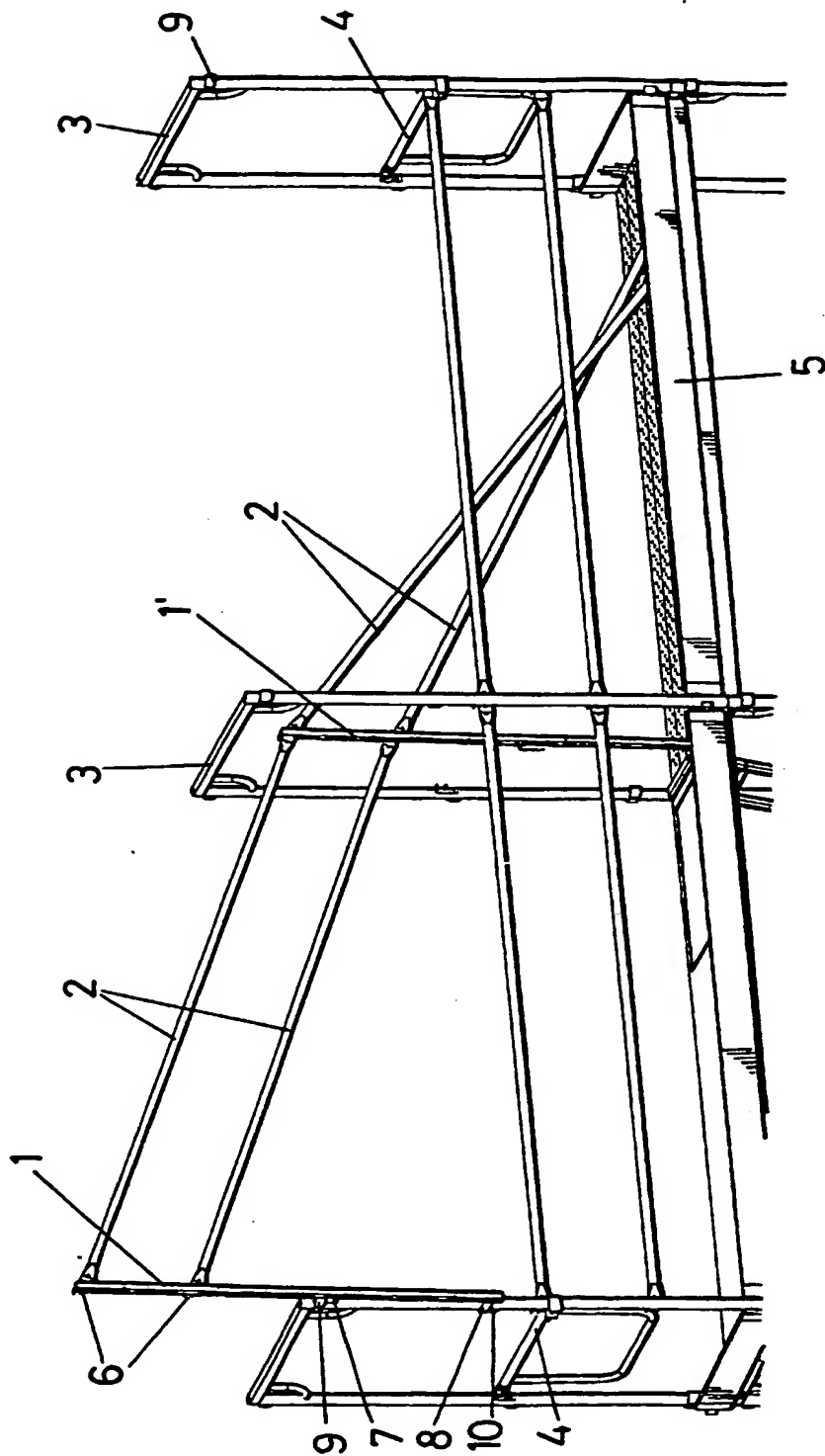
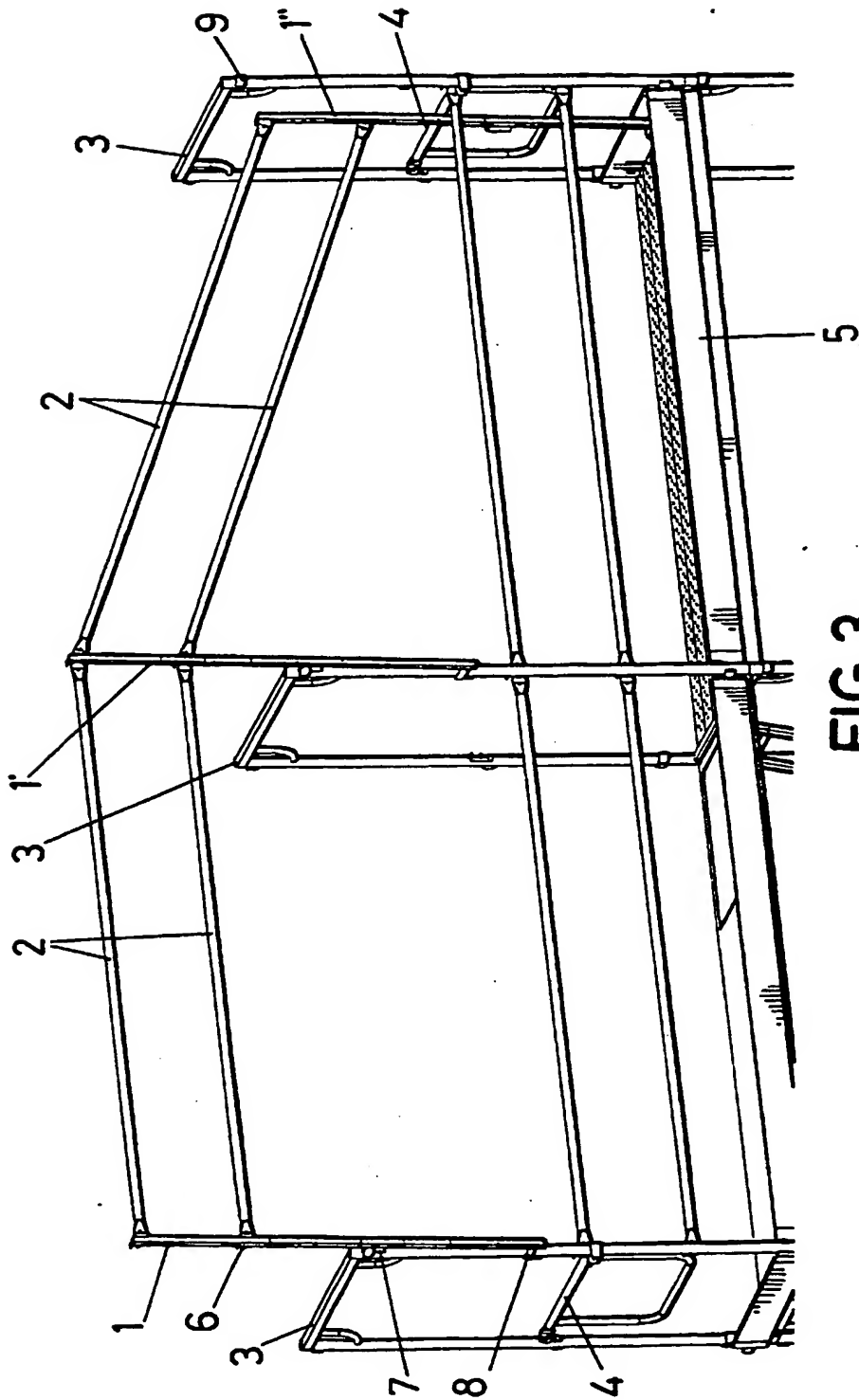


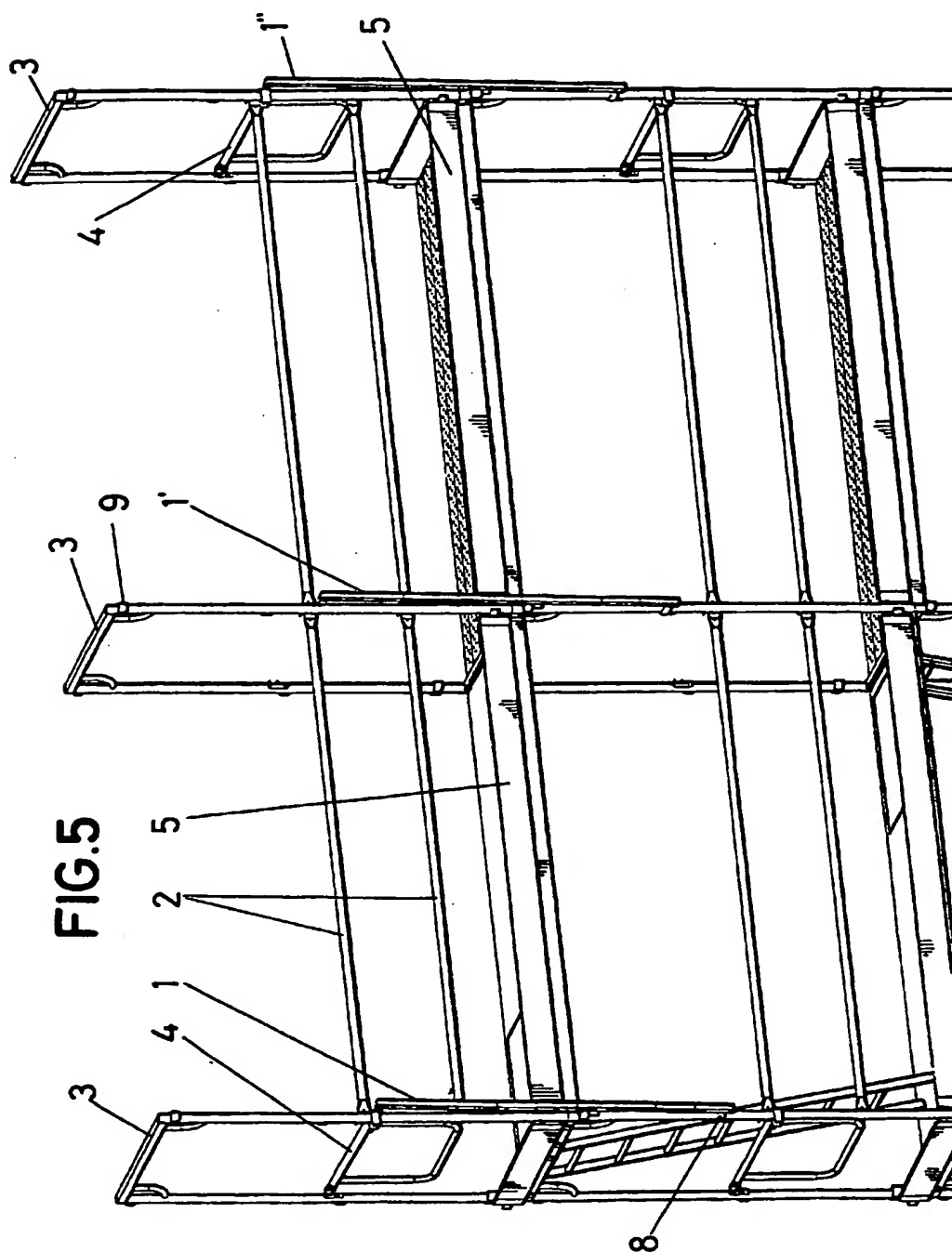
FIG.2



**FIG. 3**







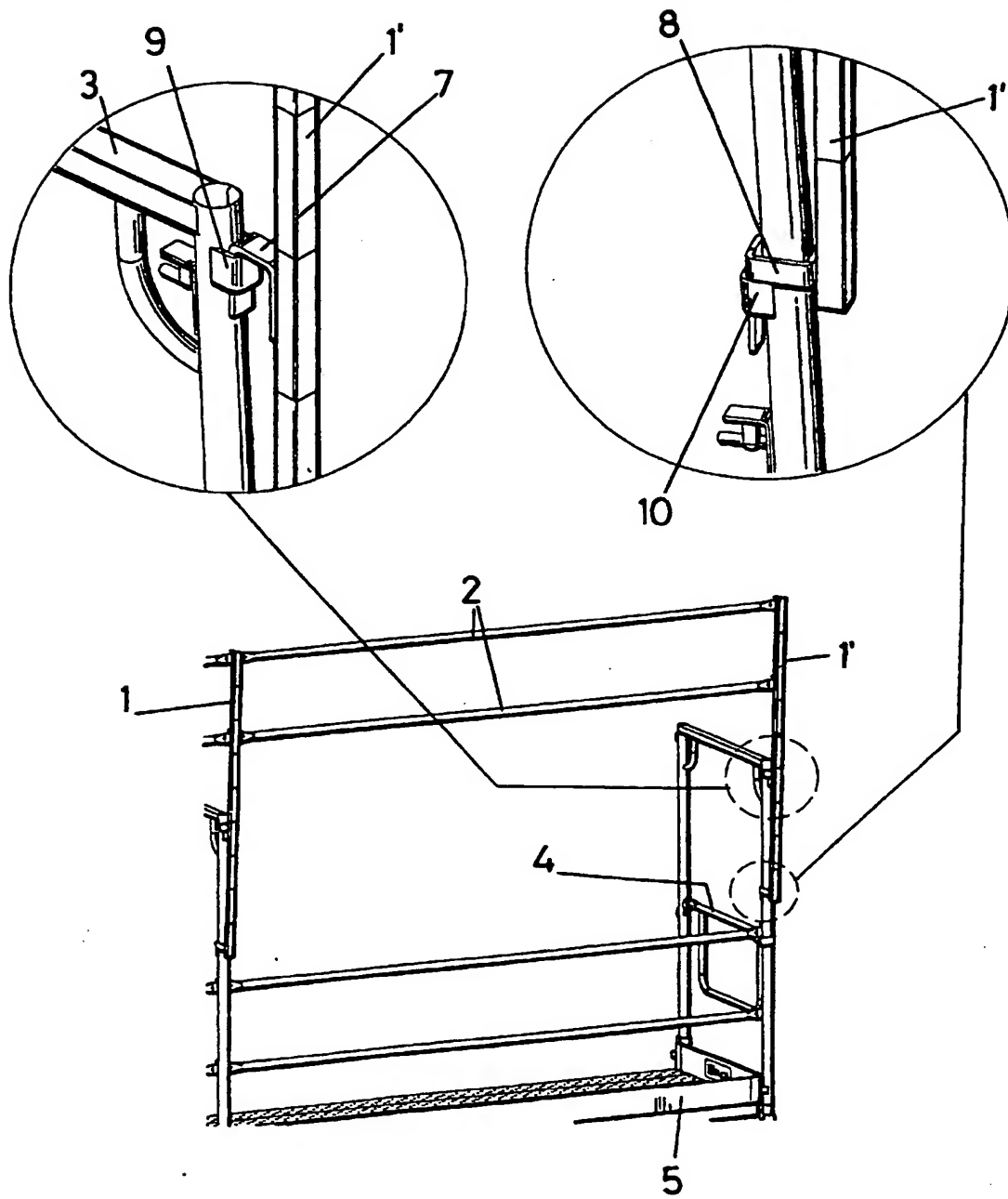


FIG.6

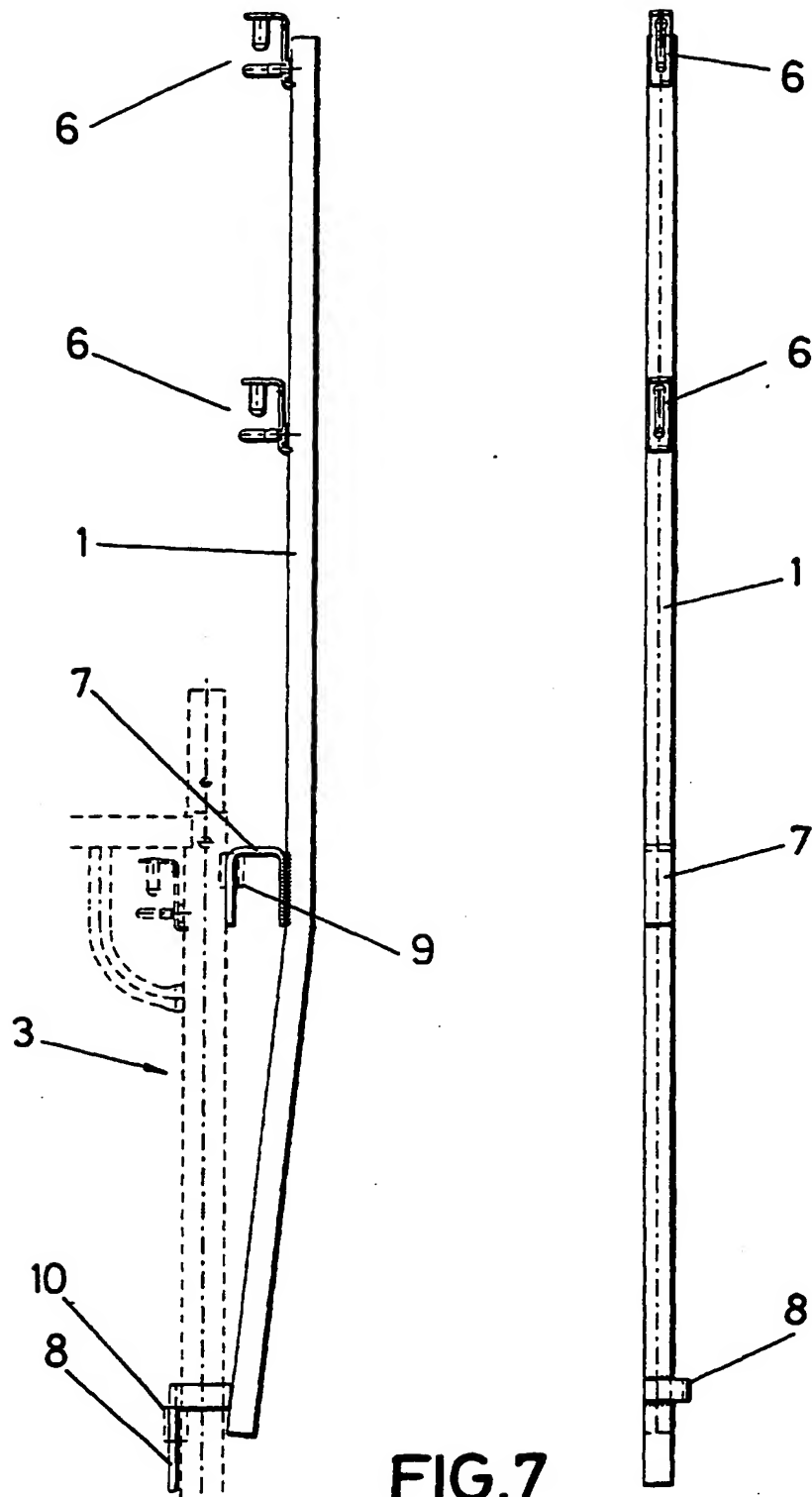


FIG. 7

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/ES 98/00130

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>		
IPC <sup>6</sup> : E04 G1/26 According to International Patent Classification (IPC) or to both national classification and IPC		
<b>B. FIELDS SEARCHED</b>		
Minimum documentation searched (classification system followed by classification symbols) IPC <sup>6</sup> : E04 G1/26, 1/16; EC E04 G1/26B, 7/30C3C		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPI, EPODOC, ECLA, UCLA, CIBEPAT		
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	WO 9807934 A (PERI GM BH) 26 February 1998 (26.02.98) abstract; figure 2.	1,2
A	FR 2732706 A (COMABI SA) 11 October 1996 (11.10.96) figures; claims 1,3,4.	1-3
A	GB 2137274 A (EBER HARD LAYHER) 3 October 1984 (03.10.84) abstract; figures,	1,2
A	FR 2533610 A (SOMEFRAN) 30 March 1984 (30.03.84)	
A	FR 2516141 A (PHILIPPE) 13 May 1983 (13.05.83)	
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.		
* Special categories of cited documents: "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reasons (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art "&" document member of the same patent family		
Date of the actual completion of the international search 9 December 1998 (09.12.98)		Date of mailing of the international search report 21 December 1998 (21.12.98)
Name and mailing address of the ISA/ S.P.T.O. Facsimile No.		Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

**INTERNATIONAL SEARCH REPORT**  
 Information on patent family members

International Application No

PCT/ES 98/00130

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 9807934 A	26.02.1998	DE 19633092 AU 4116497	19.02.1998 06.03.1998
FR 2732706 A	11.10.1996	NONE	
GB 2137274 A	03.10.1984	DE 3311139 FR 2543200	27.09.1984 28.09.1984
FR 2533610 A	30.03.1984	NONE	
FR 2516141 A	13.05.1983	NONE	

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